1. Project Name

   Prediction of New York City Bikeshare Station Occupancy Levels

2. Description of Problem

   New York City's bike share system is one of the largest bike-share systems in the world, totaling a more than 20 million rides each quarter year. In this busy bike share system, it is necessary to achieve a certain occupancy level at each station by having enough bikes for the future customers who come to pick a bike from point A, while also providing empty dock for customers who like to drop a bike. Therefore, it is necessary to understand and learn the patterns of occupancy at different stations based on different time of the day, weather conditions, and congestion level etc. to provide a better bike sharing system.

3. Project Clients

   This project's audience is considered to be the transportation agencies which support active modes of transportation to alleviate traffic congestion problem by implementing an efficient bike share system, and transportation professionals from different metropolitan cities which already have installed bike share systems, such as in Washington, D.C., and Chicago. The links for all three bike share system are below:

   - New York City: https://member.citibikenyc.com/map/
   - Washington D.C. : https://www.capitalbikeshare.com/
   - Chicago: https://www.divvybikes.com/

4. Data to be used

   The dataset to be used is public, provided by CitiBikeNYC in a quarterly manner. Even though this project aims to focus on New York City, it is also possible to acquire bike share data from other cities which publicly make these available, for example, Capital Bikeshare in Washington, D.C.

   CitiBikeNYC provides data on trips, the start time and station for a certain trip, as well as, the end time and station, trip duration, whether the user is subscriber or not, and the gender of the user if subscriber.

5. Outline of the Approach

   After the data are acquired, it is aimed to clean and explore the data. Since the data is from many different days, and stations, at the first stage, it is considered to pick only one station and analyze its occupancy levels based on incoming and outgoing trips. It is aimed to conduct the similar study over all bike share network, and quantify the effects of weather and traffic congestion on a certain station's occupancy levels.

6. Deliverables

   A short report summarizing the description of the project and dataset, along with important findings and results will be delivered.